

## A New Sugar Process.

In the past, says the *Democrat* of July 24, numerous attempts were made to make use of the many and conspicuous advantages possessed by the filter-press for the filtration of cane sugar solutions. For a long time, all such attempts failed, either on account of the gummy and mucilaginous matters present in the cane sugar solutions being deposited on the cloth, and so arresting filtration; or else the large surface of iron and lime presented by the plates of filter-press and the cakes which it contained, were found to have a darkening effect on the sugar solutions so filtered. From these and other causes, the filter-press, with all its acknowledged advantages, has been discarded by Manufacturers and Refiners of Cane sugar, and has been used to a limited extent merely for the filtration of the skimmings, bottoms etc., of some plantations, or has been given over to the undisputed possession of the manufacturers of Beet sugar.

A change has however taken place, and by means of a very simple process at present being introduced into this colony, the filter-press is made available for the filtration of Cane juice. The new process is called the "Kleeman" or "Brown Coal" process. The peculiar action of brown coal on sugar liquors, was discovered and patented by a German named Fritz Kleeman, in 1884. This patent was purchased from Mr. Kleeman by "The Sugar Refiners Appliances Co., Limited," of 139, St. Vincent Street, Glasgow. The substance used in this process is known under the name of Lignite, Brown Coal, Moss Coal, Peat Coal and Tertiary Coal. It is simply vegetable matter in an intermediate stage between peat or "pogras" and carbonaceous coal. Indeed, so closely does peat in many cases, approach the nature of brown coal, that it was considered necessary for the patentee to include that, in his specification.

Brown coal is as widely distributed over the earth as true coal. It is found in France, Italy, China, India and New Zealand. In the United States of America there are enormous deposits of this substance in the State of Vermont, and all along the banks of the Mississippi. In the northwest territory of Canada, there are deposits of it 2000 feet thick. In Ireland, on the shores of Lough Neagh, there exists a deposit of this substance, extending over an area of 10 miles long by 5 miles wide, and averaging about 60 feet in thickness. In the wilds of Devonshire at Bovey-Tracey, there also exists a very extensive deposit; a deposit, which, by the way, is at present being worked in connection with this process. The great storehouse of brown coal, is however, Germany; there in many parts, nothing but brown coal is used as fuel, both in the furnace of the factory and the stove of the cottage. It is also used for various manufacturing purposes.

To prepare the brown coal for the Kleeman process, nothing is necessary, but to reduce the coal to fine powder, an operation which is very speedily accomplished by means of a disintegrator. This powdered coal is added in certain quantities to the sugar solution, and intimately mixed. The temperature of the solution having been raised above 150 degrees F., the whole mass is at once forced through the filter-press; the filtered liquor comes from the press bright and clear having parted not only with its grosser impurities, but also with a large portion of its color. If sufficient brown coal has been added, none of the usual drawbacks attending the use of filter-press will be observed. The brown coal, by its absorptive properties, catches up and absorbs the gummy and albuminous substances present in sugar solutions, and by preventing them from being deposited on the cloth, allows the liquor to flow freely from the press. The resulting cakes are hard and dry, and can be at once used with other fuel in the furnaces of the steam boilers. This process has been in use with marked success for some months in various sugar refineries in London, Greenock and Amsterdam, and in Boston in the United States of America.

The method adopted, is as follows:—The cane juice, having been treated in the usual manner until it reaches the clarifiers, i. e., heated, tempered, and if necessary, sulphured, a quantity of brown coal, equal in weight to from 10 to 30 per cent. of the indicated sugar present in the juice is added and intimately mixed. If the temperature has fallen, it is necessary that it be again raised to between 180 deg. and 200 deg. F. but not higher. The brown coal being now properly mixed, the whole mass, bottoms, skimmings, coal, etc. is all forced into the filter-press. The juice flows freely from the press, beautifully bright and clear, and of a light straw color. Not a single trace of flocculent matter can be observed in it; and when it is submitted to either a heat or chemical test, no trace of albumen can be observed. The juice is now ready for the triple effect. After having been concentrated in the triple effect it will be found to have acquired a dark color and a muddy appearance; this is caused by the separation and solidifying of certain impurities in the juice by concentration. To produce a perfectly pure sugar, and to obtain the full benefits of this process it is necessary to mix with the concentrated syrup a quantity of brown coal equal in weight to from 6 to 10 per cent. of the indicated sugar present in the syrup; the temperature of this mixture having been raised to between 150 deg. and 170 deg. F., the whole is allowed to run by gravitation through a small filter-press. The syrup coming from this press, is bright and sparkling, and has a light lemon color. The gummy matters having been removed by the first filtration, no pressure is required for this second filtration. The cakes from this second filtration are used, after removal from the filter-press, for treating the juice for first filtration, thus no extra coal is required for second filtration.

By this new process, the whole of the old cumbersome and wasteful arrangement of eliminators, subsidiers, copper walls and settling tanks is done away with; the cane juice instead of remaining exposed to the deleterious action of the atmosphere for a length of time, varying from five to twenty hours, is made ready for the triple effect within one hour from the time of expression, and this by means of appliances at present in use on many estates. The

treated juice when boiled in the vacuum pan is found to grain much more freely than the common juice, and is free from all stickiness.

The advantages claimed for this process are briefly these; speed of filtration; increased yield of sugar partly on account of the greater purity of the juice, but principally by avoiding inversion; a better class of sugar obtained without the use of chemicals.

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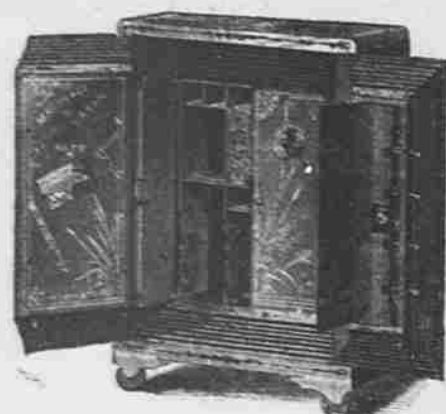
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